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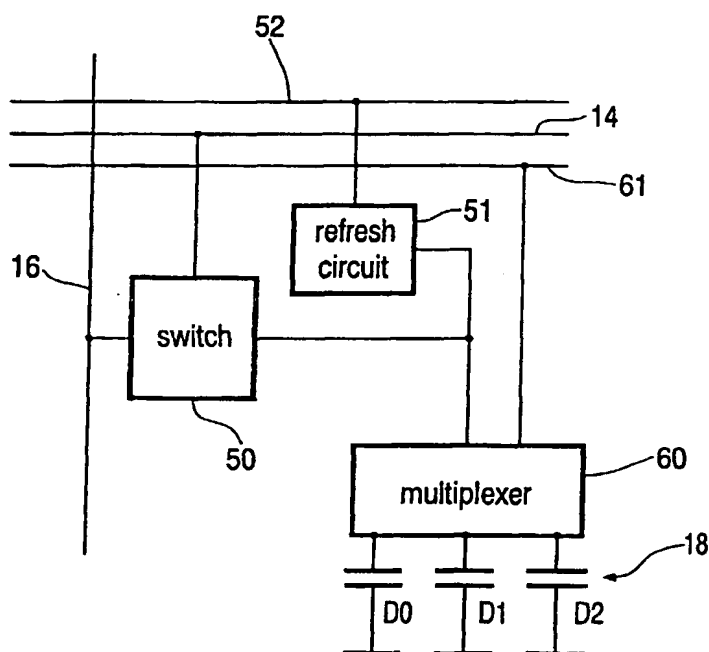
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ACTIVE MATRIX ARRAY DEVICES



(57) Abstract: An active matrix device includes a plurality of display elements 10 including a data storage node 18, 72 for storing data in the form of charge on a capacitor 72 and/or capacitive element 18. Refresh circuitry 51 is provided to refresh the data storage node, for example including temporary storage circuit 55 and drive circuit 56.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 02/02959

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G09G3/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 977 940 A (HIOKI TSUYOSHI ET AL) 2 November 1999 (1999-11-02) the whole document -----	1-5, 14-17
X	US 5 712 652 A (HARADA NOZOMU ET AL) 27 January 1998 (1998-01-27) the whole document -----	1-5, 14-17
X	US 5 396 261 A (HASTINGS III WILLIAM A) 7 March 1995 (1995-03-07) the whole document -----	1,2,4,5, 14-17
X	US 4 870 396 A (SHIELDS STEVEN E) 26 September 1989 (1989-09-26) the whole document -----	1,2,4,5, 14-17
X	US 4 406 997 A (DEPP STEVEN W ET AL) 27 September 1983 (1983-09-27) the whole document -----	1,2,4,5, 14-17

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 02/02959

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-5, 13-17

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5,13-17

The first concept concerns an active matrix device with an array of matrix elements, each matrix element having at least a storage node, which has a capacitance, refresh circuitry for refreshing the data stored on the storage node,

and wherein the refresh circuitry comprises

- a temporary storage circuit for storing the data and
 - a storage node driving circuit including an inverter for driving the storage node with the inverse of the data stored in the temporary storage circuit.

2. claims: 1,6

The second concept concerns an active matrix device with an array of matrix elements, each matrix element having at least a storage node, which has a capacitance, a refresh circuitry for refreshing the data stored on the storage node,

and wherein each matrix element includes

- an address switch controlled by an address line connected between a column line and the storage node,
 - a storage switch for connecting the storage node to a storage node drive circuit,
 - a refresh switch for connecting the storage node to a temporary storage circuit,
- the control terminals of the storage switch and the refresh switch being connected to a common refresh line.

3. claims: 1,7-12

The third concept concerns an active matrix device with an array of matrix elements, each matrix element having at least a storage node, which has a capacitance, a refresh circuitry for refreshing the data stored on the storage node,

and a plurality of data storage capacitances for storing a plurality of bits of data per matrix element.

INTERNATIONAL SEARCH REPORT

International Application No

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